KYOTO UNIVERSITY GRADUATE SCHOOL OF MEDICINE
DEPARTMENT OF PHARMACOLOGY

Microglia specific circuit defects in repetitive behaviors and neuropsychiatric diseases.

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https://kyoto-u-edu.zoom.us/j/3985775182?pwd=Y3UwTFg3M3NlYlNmRC9abkhDbGdnZz09

Dr. Naveen Nagarajan has a longstanding interest in identifying mechanisms underlying microglia-neuronal interaction in neural circuit function and circuit specific behaviors. Dr. Nagarajan in Dr. Capecchi's lab identified a novel neural circuit that controls repetitive behavior in Hoxb8 mouse model of obsessive compulsive disorder (OCD)-type repetitive grooming behavior. Hoxb8 gene is exclusively expressed in 30% of brain microglia. Notably, the loss of function of Hoxb8 gene that leads to repetitive grooming behavior results in corticostriatal circuit defects. A deeper analysis within the corticostriatal circuit led to surprise findings where Hoxb8 microglia within specific sub regions of the corticostriatal circuit are optogenetically active and generates site specific behavior upon microglia activation. More recent experiments have revealed that Hoxb8 microglia utilizes calcium signaling as a mechanistic way to communicate with neurons within corticostriatal circuit. The studies provide insights into how proper function of microglia is essential for maintaining a healthy neural circuit required for the optimal behavioral function and how genetic defects in microglia could alter neural circuit function and the behavioral output.

Host: Yasunori Hayashi x84393